sive, and as the cost of a drug is an important item in the economies of many physicians and their patients, it is doubtful whether many serious trials will be made with diuretin for some time to come.—*Boston Medical and Surgical Journal*, No. 18, 1890.

MEDICINE.

UNDER THE CHARGE OF

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APHASIC AND AMNESIC DEFECTS OF SPEECH.

BASTIAN (*Lancet*, 1890, i. 1163) calls attention to the importance of a systematic and uniform mode of examination in the effort to discover the exact nature of a speech defect; as, unless this be made, a detailed diagnosis is extremely difficult. Speech defects of different kinds result from lesions in very different parts of the brain. While words are the vehicles of intellectual expression, the memory for words is fourfold, the four forms of verbal memory being registered in different parts of the cerebral hemispheres, the several centres being connected by commissures, and being called into activity by different combinations, according as we are listening, reading, writing, or speaking.

The four forms of verbal memory are these: (1) The auditory memories of words, which, we may say, are registered in the posterior part of the upper temporal convolution; (2) The visual memories of words, registered in some unknown part of the occipital lobe; (3) The glosso-kinæsthetic memories of words, or the memories of our articulatory sensations, which he believes to be located in the posterior part of the third frontal convolution; (4) The cheiro-kinæsthetic memories of words, or those of the sensations connected with writing movements, which he believes to be registered in the hinder part of the second frontal convolution. These last two centres are the sites from which, in speaking and writing respectively, volitional incitations issue through descending internuncial fibres, so as to arouse in appropriate modes the true motor centres situated in the medulla and spinal cord. He believes that the action of these last, as of all motor centres, is entirely devoid of all sensory accompaniments—that is to say, whilst movements are invariably preceded and incited by processes taking place in sensory nerve elements, and whilst the excitation of the movements invariably gives rise to a body of ingoing impressions (kinæsthetic) emanating from muscles, skin, joints, etc., the actual nerve processes excited in the motor centres proper are devoid of any conscious accompaniment, and are wholly incapable of independent memorial recall. What he calls "motor centres proper" are commonly called lower motor centres. "Kinæsthetic centres" is his term for the cortical motor centres, since he is of the opinion that no motor centres exist in the cerebral cortex. He thinks that in what are termed cortical motor centres sensory results of different movements are registered, and that the reëxcitation of these centres constitutes the necessary antecedent—the veritable stimulus—for the reproduction of the movements to which they are related. The excitation of these parts of the cortex constitutes, in fact, the terminal part of a voluntary act, so far as it had to do with the cortex. The precise mode of ideally-revived activity here and in other sensory centres gives rise to correspondingly precise stimuli, which, passing downward to the true motor centres, constitutes the volitional incitations for the desired movement.

The activities of these different word-centres are almost never called into play singly; for the most part, two or three of them are roused through commissural fibres almost simultaneously, though really in rapid succession. Thus, we think in words, whether the result is to be silent thought, speech, or writing. In the first case the activity is mainly in the auditory centre, though diffused to some extent in two directions—that is, toward the glosso-kinæsthetic and the visual word-centre. If the thought is to issue in speech the stimulus in the former direction is much the more powerful, and the conjoined activity of the two centres suffices to rouse the motor centres for speech. If, on the other hand, the thought is to issue in writing, the activity of the auditory centre is immediately followed by a powerful action in the visual word-centre, and this again by activity in the cheiro-kinæsthetic word-centre, whence volitional stimuli issue for the production of writing movements. There appears always to be a prior activity in the visual or auditory word-centres, before the two kinæsthetic centres are called into activity.

In the examination of all cases of speech-defect we have to test in a systematic manner the integrity of these different word-centres, of the commissures which unite them, of the internuncial fibres issuing from the cortex, and of the true motor centres in the bulb. (*a*) If the patient understands what is said to him, and can repeat words which he has just heard pronounced, it shows that the auditory and glosso-kinæsthetic centres, with the commissure between them, as well as the outgoing channels and the corresponding motor centres, are free from serious damage; (*b*) If the patient can understand written speech, and can copy a word which has been written before him, it shows that the visual and cheiro-kinæsthetic centres, with the commissure between them, as well as the outgoing channels and the corresponding motor centres, are free from serious damage; (*c*) If the patient can read aloud or name objects at sight, it shows that the visuo-auditory commissure must be intact; (*d*) If the patient can write from dictation, it shows that the audito-visual commissure must be undamaged.

The author doubts the existence of any " centre for conception of ideas." He believes that the supposed necessity for assuming the existence of any such centre may be obviated by a fuller recognition of the different degrees of excitability of the auditory word-centre, and by the fact that when its excitability is lowered to different degrees, very different kinds of speech-defect are produced. Thus, where there is a slight lowering of the functional activity of the auditory centre we have a slight amnesia, with forgetfulness of names of persons and things; where the defect is graver the power of spontaneous speech may be nearly obliterated, though imitative speech may be retained and the patient be able to read aloud fluently—*i. e.*, the auditory centre is only capable of reacting on receipt of a strong external stimulus, or of one coming to it from the visual word-centre; whilst, finally, if the auditory word-centre is entirely destroyed, there is entire word-deafness with complete aphasia.

He then reports a case in which there was lowered excitability of the auditory word-centre, preventing any other than the smallest amount of spontaneous speech, together with some aphemic difficulty in the mere utterance of words; though the main and most interesting defect was due to a lesion severing the two commissures between the auditory and visual word-centres. The patient could, namely, understand perfectly all that was said to him, or all that he read, but could neither write nor speak spontaneously, except to a very limited extent. He could, however, repeat words spoken to him, or copy those written. Moreover, (1) he could not name at sight or read aloud a single letter, nor (2) could he write a single letter from dictation. These two symptoms show that the two commissures between the visual and auditory word-centres had been damaged in some part of their course.

Finally, the author defines the various forms of speech-defects. In aphemia the patient can write freely. The condition may be incomplete, and then the utterance is more or less blurred or indistinct; or it may be complete, and then he is absolutely dumb. Here the lesion is not of the cortex, but of some part of the internuncial fibres as they pass downward from the third frontal convolution to the motor centres of the bulb. In *aphasia* the power of speech and writing are generally nearly lost, and there is usually some interference with thought. As regards the seat of the lesion in simple aphasia, he claims that the localization of Broca is clearly inadequate, and that there is absolutely no clinical difference between the aphasia produced by a lesion in the posterior part of the third frontal convolution and that which may be produced by a lesion in any part of the commissure connecting it with the auditory word-centre. Where a destructive lesion involves the auditory word-centre there is *word-deafness with aphasia.* Such a patient's mental condition is profoundly altered; he can neither speak nor understand speech, and, since words are first and principally revived in the auditory word-centre, thought in words is no longer possible; and since the revival of words in the visual centre could not be reinforced by their revival in the auditory centre, the comprehension or use of printed or written words no longer exists. In *commissural amnesia* the commissures are damaged between the auditory and visual word-centres, and the patient is consequently no longer able to name and read at sight, or to write from dictation. A lesion in the visual word-centre gives rise to *word-blindness with agraphia.* The patient may be quite unable to understand either written or printed language, but can comprehend spoken language, and can both think and speak. In *agraphia* the patient can speak and read, but cannot write. There is little or no interference with thought. The lesion is one of the cheiro-kinæsthetic centre situated in the posterior extremity of the second left frontal convolution, but a damage to any part of the commissure connecting this with the visual word-centre would produce exactly the same defect, since the stimulus must pass from the latter to the former centre.

The author does not countenance the division of aphasia into "motor" and "sensory." The defects are in all cases in the sensory centres, or in the commissures between them; excepting in the case of aphemia, where, as stated, it is in the internuncial fibres passing from the third frontal convolution to the motor centres in the bulb. The fact that a paralytic disability is produced does not in any way prove that it is not due to a defect in a sensory centre, or in a commissure between two such centres; it is here, in fact, that we have to look for the sources of the volition.

STUDIES ON ULCUS VENTRICULI SIMPLEX, GASTROMALACIA, AND ILEUS.

TALMA (*Zeitschr. f. klin. Med.*, 1890, xvii. 10) reviews briefly some of the various views which have been held regarding the mode of origin of ulcer of the stomach and of gastromalacia, showing that even yet little definite knowledge is possessed regarding it, and that the majority of writers consider that gastromalacia never occurs before death.

The author has undertaken a series of experiments upon animals with reference to this subject and to the relation of these lesions to ileus. These he reports in detail. The procedure followed consisted in the ligation of various parts of the intestinal tract; sometimes of the œsophagus and duodenum, sometimes of the duodenum alone or of some other part of the large or small intestine, sometimes in the separation of a loop of small intestine by a double ligation. Great swelling of the abdomen resulted in nearly every instance; due almost always to accumulation of fluid above the ligature. Gas was found in some cases, partly the result of the swallowing of air, partly due to fermentation. Investigations showed that these fluid contents of the intestinal tract consisted chiefly of the gastric secretion. The amount of hydrochloric acid poured out after the ligation of the duodenum appeared to be abnormally great. If the ligature was lower in the intestine, the secretion of the intestinal glands was also present, but it is uncertain what proportion of the fluid this formed. The nature of the fluid poured out by the intestine, and the character of the lesions seen both above and below the point of ligation seemed to depend largely upon the character of the gastric and intestinal contents at the time the experiment was made. Whatever the correct explanation may be, it is certain that very grave alterations often develop in the portion of the intestine below the ligature.

The results of closure of the large intestine were somewhat different from those just described. The animals lived longer, the distention of the abdomen was not so marked, and the fluid had accumulated in the large intestine, leaving the small intestine and stomach entirely empty. The marked power of the large intestine to absorb water was doubtless the reason that no more fluid was present. Fæcal changes take place in the substances blocked up in either the large or small intestine, but not in a loop of the bowel which has been cut off by a double ligature. From this the author concludes that the change is either due to ferments introduced with the food, or that it can take place only in ingesta which have undergone a certain degree of alteration. The production of the fæcal character took place first in the portion of the contents nearest to the ligature.

The curative influence of vomiting was seen in the fact that rabbits, which do not vomit, died quickly through overfilling of the stomach, while dogs lived several days, because they do vomit. The practical deduction from this is that patients with ileus, who vomit with not too great labor, should frequently